UNIQUE MULTIFUNCTION INSTRUMENT *FOR TESTING SAFETY ON ELECTRICAL INSTALLATIONS*

MACROTEST G3

A NEW WORKING CONCEPT BY HT...

Environmental Parameters Measure
Phase Sequence Indication
Continuity Test 200mA
Ground Resistivity
MCB Test
Insulation Resistance 1000VDC
Earth Resistance
Display Touch-Screen
Advanced Loop Impedance
RCDs Type A AC B up to 1A
Advanced Loop Impedance
Display Touch-Screen
Earth Resistance

NEW

MacrotestG3 *represents the ideal fusion between HT 30 years' experience and the numberless opportunities offered nowadays by new technologies.*

Feel free to let yourself be assisted by MacrotestG3 to find promptly a solution to all problems related to safety check on civil and industrial installations.

Touch-screen

All measurements at your fingertips.

Adding a note and saving measurements has never been so easy thanks to its interactive keyboard.

TECHNOLOGY ***MADE IN ITALY***

Simple, outright, accurate.

- One instrument to carry out all measurements required by standards in force
- Intuitive icons
- On-line help
- Display of measurement outcome ok or not ok

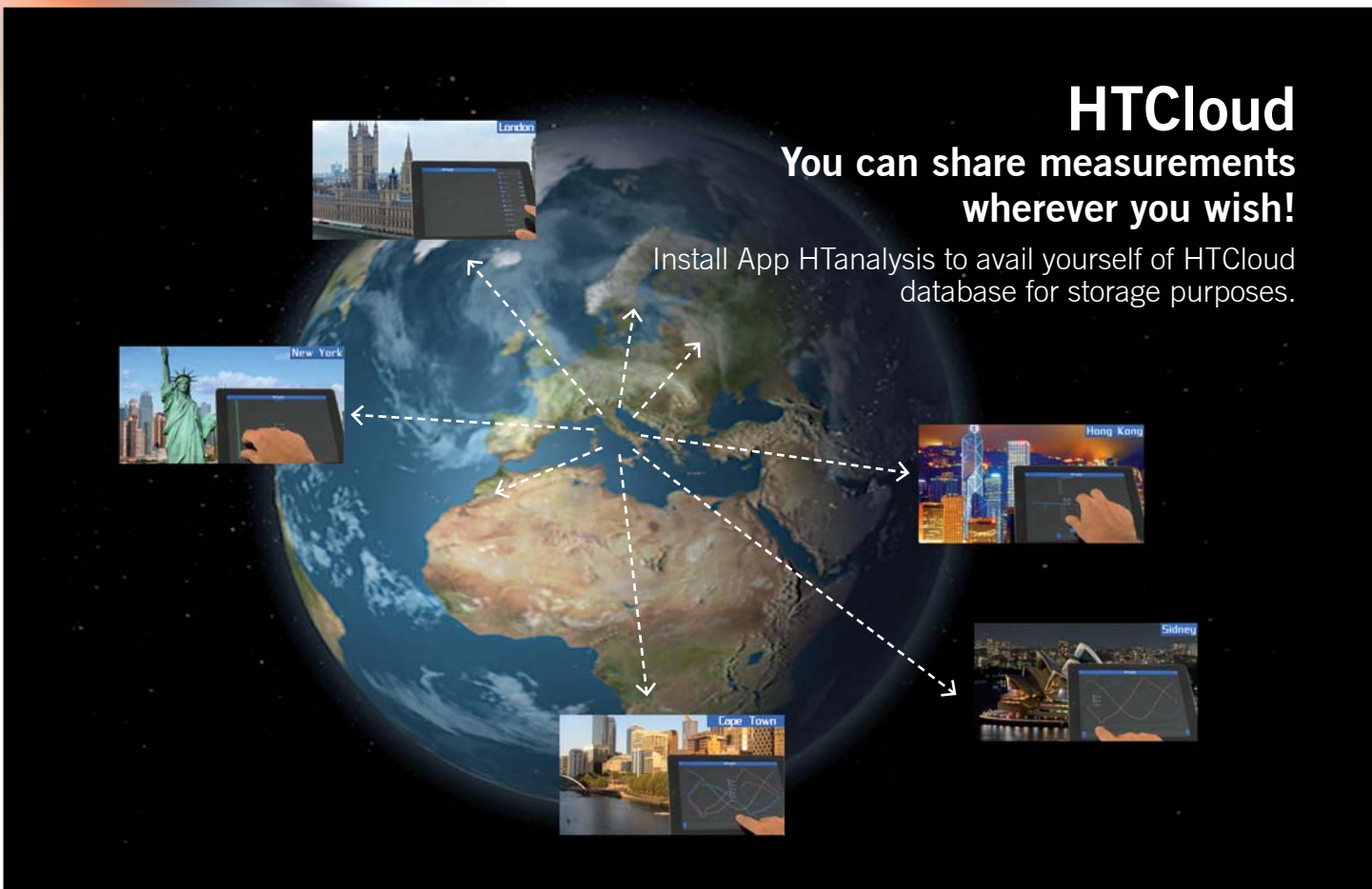
App HTanalysis for IOS (iPad/iPhone) and Android systems.

HTanalysis

You can share pictures and reports all the time

Install App HTanalysis on your tablet or smartphone.

By means of **HTanalysis** you can write detailed reports with pictures, add audiovisual notes, manage all measurement results.



HTCloud

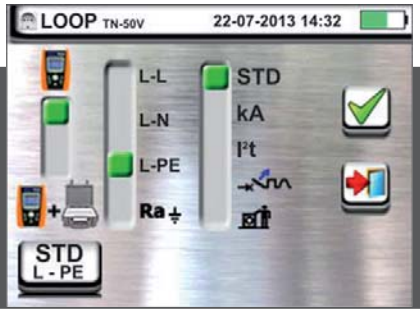
You can share measurements wherever you wish!

Install App HTanalysis to avail yourself of HTCloud database for storage purposes.

ADVANCED LOOP

Testing of protective MCBs, fuses and cable sizing

According to IEC/EN61557-3



HT enriched loop measurement integrating calculations and analysis of test results

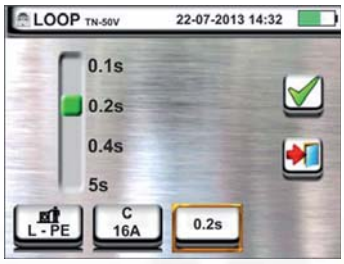
According to standards installers are required to size electrical installations in order to grant:
- line protection,
- protection against indirect contacts,
- protection against short circuits, that is to say:

a) protection device breaking power shall not be lower than the prospective short circuit current value where it was installed;
b) protection device shall trip out promptly in case of short circuit at any point of the protected line.
MacrotestG3 carries out the following functions:

-Check of protection against indirect contacts (TT - TN - IT)

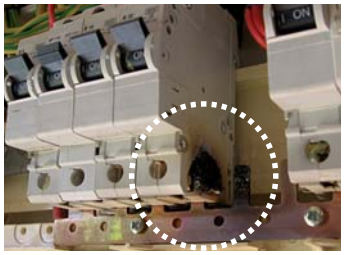
When an earth fault occurs masses' voltage values can become dangerous for a while equal to the protection device tripping time. Based on the system (TT, TN, IT) as well as on protection device type the instrument effects measurements checking protection device breaking power and tripping time provided by the standards so granting positive outcome in case of compliance.
For example in a TN system when setting the MCB/fuse curve type as well as tripping type the instrument:
- measures fault loop impedance calculating short circuit current **Isc**,
- measures short circuit current **Ia** which shall be interrupted by MCB/fuse within the set time.

If relation **Ia** ≤ **Isc** is complied, measurement outcome will be OK. Voltage on masses is not dangerous for indirect contacts.



kA - Check of MCB/fuse breaking power

The unit detects impedance value upstream of the measuring point, calculates value of maximum short circuit current granting negative outcome if such a value is higher than the limit set by user (usually the value indicated on protection device).



I²t - Check of protection against short-circuit thermal effects

Setting fuse or MCB type, rated current, diameter and conductor material as well as number of cables in parallel, the instrument measures impedance calculating the short circuit current value **Isc** as well as corresponding value of protection device tripping time **(t)** giving negative outcome if energy flowing allowed by protection device is higher than that supported by cables according to the following relation:

$$I_{sc}^2 t \leq K^2 S^2$$

where:
K is a parameter indicated by standards depending on material of conductor and of insulating sheath
S is cable section.

- Check of protection tripping time

The unit detects impedance value upstream of the measuring point, calculates value of minimum short circuit current **(IMin)** and the corresponding value of protection tripping time **(t)** granting positive outcome if such a time is lower than the limit set by user. In addition to the above said tests the unit carries out also:
STD - Line impedance measurement among L-N, L-L, L-PE and calculation of prospective short circuit current. All the above mentioned measurements can be effected with high resolution of 0.1mohm by means of accessory **IMP57.**

EARTH

Earth resistance measurement

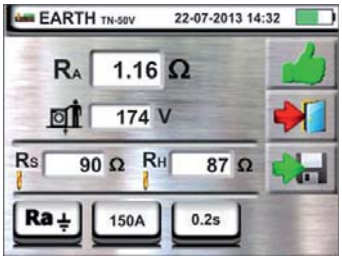
According to IEC/EN61557-5

Measurement of earth resistance by means of 3- and 2-wires on TT TN and IT systems

Depending on system type set by users (TT, TN. IT) the unit effects measurements checking conditions provided by the standards for protection against direct contacts so granting positive outcome in case of compliance.

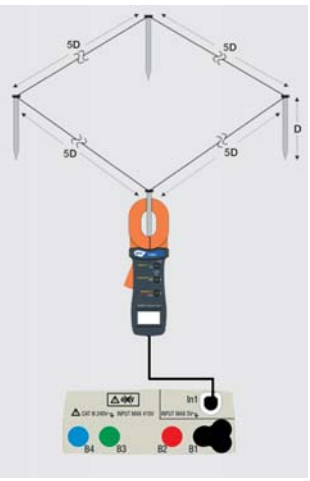
For example in a TN system when setting maximum earth fault current **Ig** and MV protection tripping time (as per indication given by the energy supply company), the instrument calculates contact voltage Utp after measuring earth resistance, then compares value with data provided by standards.

If outcome is OK step and contact measurement shall not be carried out.



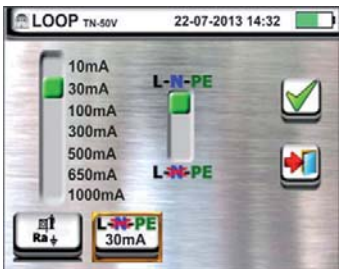
Measurement of earth resistance with clamp T2100

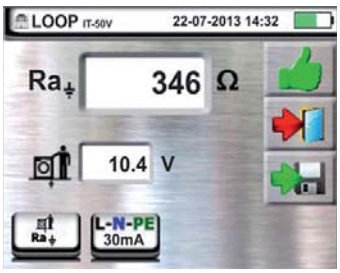
MacrotestG3 employs an innovative method of measuring earth resistance so eliminating the problem of identifying the proper location where auxiliary rods can be set. Earth measurement becomes easier thanks to a new algorithm HTEarth capable of storing all measurements effected with clamp T2100 on each rod and automatically calculating overall earth resistance value.



Non-trip earth loop impedance (overall earth resistance)

Measurement of earth resistance without causing RCD tripping out in systems with and without neutral as well as measurement of contact voltage.





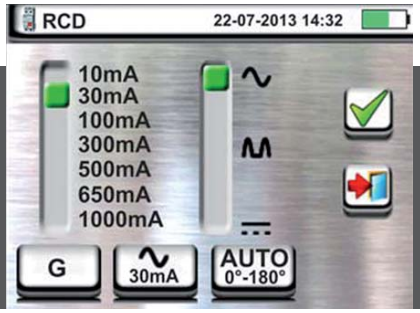
Ground resistivity

Measurement of ground resistivity (ρ) by 4-wire Wenner method.

RCD

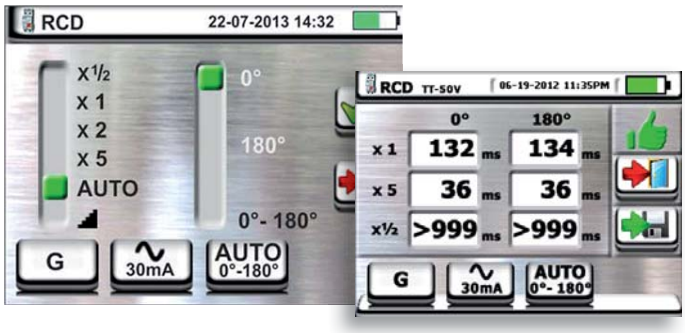
Test on RCDs

According to IEC/EN61557-6



Test of RCD type A, AC with test current up to 1A and type B.

Test of **General**, **Selective** and **Delayed** RCDs with possibility of setting delay time.



Test type: x½ x1 x2 x5 and AUTO mode to effect 6 sequential tests.

Ramp
Measurement of real tripping current.

Mohm

Measurement of insulation resistance

According to IEC/EN61557-2

- Quick setting of limit values and test voltages through virtual keyboard
- Setting of TIMER for test duration
- Test voltage 50, 100, 250, 500, 1000 VDC
- Function AUTO.

Continuity

of protective conductors with 200mA

According to IEC/EN61557-4

- Calibration of measuring cables
- Quick setting of limit values through virtual keyboard
- Setting of TIMER for test duration.

AUX

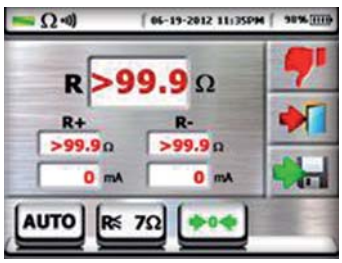
Measurement of environmental parameters with optional probes

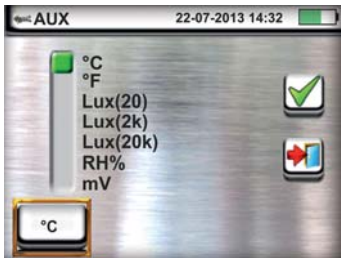
This function permits to measure the following environmental parameters by means of external transducers:

- Air temperature in °C, °F as well as relative humidity RH%,
- Illuminance (range 20/2K/20K Lux),
- DC mV input voltage.

Measurement saving and management software

The instrument permits to save each result into its memory organized in a tree view. Adding comments is possible thanks to a virtual keyboard. Data transfer to a PC can be effected through both USB and Wi-Fi connection by software capable of creating measurement reports





SEQ

SEQ (phase sequence detection)

- Detection of phase sequence under one or two terminal mode,
- Detection of phase conformity.

Leakage currents

Setting full scale values 1A, 100A, 1000A, measurement of leakage current will be possible through an external clamp meter **HT96U.**

TECHNICAL SPECIFICATIONS

Continuity with 200mA

Measuring range:	0.01Ω ÷ 99.9Ω
Accuracy:	±(5.0%reading + 3 digits)
Test current:	> 200mA (R ≤ 2Ω)
Open circuit voltage:	4V ≤ V_0 ≤ 12V

Insulation resistance

Test voltage:	50, 100, 250, 500, 1000VDC
Measuring range:	0.01MΩ ÷ 99.9MΩ (50V), 0.01MΩ ÷ 199.9MΩ (100V) 0.01MΩ ÷ 499MΩ (250V) 0.01MΩ ÷ 999MΩ (500V) 0.01MΩ ÷ 1999MΩ (1000V)
Basic accuracy:	±(2.0% reading + 2 digits)
Test current:	>1mA on 1kΩ x Vnom (50,100, 250,1kV) >2,2mA on 230kΩ @ 500V
Short circuit current:	<6.0mA for each test voltage

Line/Loop Impedance (L-L, L-N, L-PE)

Measuring range:	0.01Ω ÷ 199.9Ω
Resolution:	0.01Ω min (0.1mΩ with optional accessory IMP57)
Accuracy:	±(5.0% reading + 3 digits)
Test voltage:	100÷265V (L-N) / 100÷460V (L-L), 50/60Hz
Maximum test current:	81A (@265V), 10.10A (@457V)
Selectable MCB protections:	curves B, C, D, K
Selectable fuse protections:	type aM and gG
Insulating material (test I2t):	PVC, butyl rubber, EPR, XLPE

Earth resistance and ground resistivity

Measuring range R:	0.01Ω ÷ 49.99kΩ
Measuring range ρ:	0.06Ωm ÷ 3.14MΩm
Accuracy:	±(5.0%reading + 3digits)
Test current:	10mA, 77.5Hz
Open circuit voltage:	<20Vrms

RCD tripping time and current

RCD type:	AC (∿), A (∿), B (⎓), General (G), Selective (S), Delayed (R)
RCD rated currents:	10, 30, 100, 300, 500, 650, 1000mA
L-N, L-PE voltage:	100V ÷ 265V, 50/60Hz ± 5%
Half sine-wave test current:	0°, 180°
Tripping time accuracy:	±(2.0%reading + 2 digits)
Test current multipliers:	x1/2, x1, x2, x5
Tripping current range:	(0.3 ÷ 1.1) Idn (AC, A)
Tripping current accuracy:	5%Idn (10mA – 650mA)

Non-trip earth loop impedance

L-N, L-PE voltage range:	100V ÷ 265V, 50/60Hz ± 5%
Measuring range:	0.01Ω ÷ 1999Ω (systems with neutral), 1Ω ÷ 1999Ω (systems without neutral)
Accuracy:	±(5.0%reading + 3digits)
Test current:	<15mA

Contact voltage Ut

Measuring range:	0 ÷ Utlim (Utlim = 25V or 50V)
Accuracy:	±(5.0%reading + 3digits)

1 terminal phase sequence

L-N, L-PE voltage range:	100V ÷ 265V, 50/60Hz ± 5%
Measurement type:	contact on metal parts (no insulating material)

Leakage current (with clamp HT96U)

Measuring range:	2mA ÷ 999mA
Resolution:	1mA
Accuracy:	±(5.0%reading + 3 digits)

Measurement of environmental parameters (with optional probes)

Air temp. (°C/°F):	-20.0÷60.0°C/-4.0÷140.0°F
Relative humidity:	0% ÷ 100%RH
Illuminance (Lux):	0.001lux ÷ 20klux
Accuracy:	±(2.0%readig + 2digits)

GENERAL SPECIFICATIONS

Power supply:	6x1.2V rechargeable type AA NiMH or 6x1.5V type AA alkaline
Battery life:	>500 test (alkaline)
Display:	320x240 resistive color LCD with touch screen
Memory:	999 locations, 3 marker levels
PC interface:	optical/USB and Wi-Fi (with accessory C2013)
Dimensions (L x D x H):	225 x 165 x 75mm 8.9 x 6.5 x 3.0in
Weight (including batteries):	1.2kg / 2.7lb
Safety:	IEC/EN61010-1, double insulation
Pollution degree:	2
Mechanical protection:	IP50
Measuring cat.:	CAT III 240V, max 415V among inputs
Reference standards:	IEC/EN61557-1-2-3-4-5-6-7
Working temperature:	0° ÷ 40°C / 32° ÷ 104°F
Working humidity:	<80%RH
Storage temp.:	-10° ÷ 60°C / 14° ÷ 140°F
Storage humidity:	<80%RH

STANDARD ACCESSORIES

C2033X:	3-banana to Shuko plug cable
PR400:	remote switch probe
KITGSC5:	kit including 4 cables, 4 alligator clips and 2 test leads
KITTERRNE:	soft carrying bag containing 4 cables and 4 earth rods
PT400:	stylus
BORSA2051:	soft carrying bag
TOPVIEW2006:	PC software and optical-to-USB connection cable C2006
YABAT0003000:	rechargeable NiMH battery 1.2V, AA, 6 pcs
YABAT0002000:	external battery charger, 2 pcs

Quick user's guide
User's manual on CD-ROM
Calibration certificate ISO9000

OPTIONAL ACCESSORIES

HT96U:	transducer for AC currents (including leakage current) 0 ÷ 1, 0 ÷ 100, 0 ÷ 1000A AC
IMP57:	high resolution impedance measurements adapter
T2100:	earth ground clamp transducer
HT52/05:	transducer for temperature/ humidity measurement
HT53/05:	transducer for illuminance measurement
C2013:	Wi-Fi adapter
SP-0400:	free hands kit
606-IECN:	magnetic adapter for connection to screw heads
1066-IECN:	black connector for extensions (4mm banana)
1066-IECR:	red connector for extensions (4mm banana).

HT96U

IMP57

HT52/05

HT53/05

C2013

PR400

TOPVIEW2006

T2100
Earth ground clamp transducer (optional accessory)

CAMPOVISIVO Stampa: Labanti&Nanni - Bo 11-2013 REV. 01

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EURO-INDEX
Service

Onderhoud en kalibratie van meetinstrumenten

De Nederlandse vestiging van EURO-INDEX beschikt over een bijzonder modern service- en kalibratie-laboratorium. Hier worden de meetinstrumenten uit het assortiment preventief onderhouden, gerepareerd, gekalibreerd en indien nodig gejusteerd. Het service- en kalibratielaboratorium van EURO-INDEX is verdeeld in verschillende disciplines, gebaseerd op het soort meetinstrument en de gemeten grootheden.

- Druk
- Gasanalyse
- Temperatuur (inclusief infrarood temperatuurmeting en thermografie)
- Elektrische grootheden
- Gasdetectie
- Luchtsnelheid en luchthoeveelheid

Waarom een kalibratiecertificaat?

Een kalibratiecertificaat vermeldt hoeveel een meetinstrument afwijkt ten opzichte van onze, naar (inter)nationale standaarden herleidbare, kalibratiemiddelen. Bij de meetresultaten op het certificaat wordt tevens vermeld of het meetinstrument voldoet aan de specificaties die door de fabrikant zijn opgegeven.

Zonder kalibratiecertificaat kunt u er vanuit gaan dat de meter voldoet aan de fabrieksspecificaties, maar aantonen kunt u dit niet. Een testcertificaat van de fabrikant is te beknopt om de lineairiteit aan te tonen en is niet geregistreerd op naam (wat wel degelijk een vereiste is).

KWS®

KWS® is een uniek servicesysteem voor uw meetinstrumenten met periodiek onderhoud en kalibratie. Veel zaken worden voor u geregeld, zodat u zonder zorgen gebruik kunt maken van uw meetinstrumenten.

- De prijs staat vast voor de levensduur van het instrument (mits de KWS® behandeling volgens herkalibratieadvies periodiek wordt uitgevoerd in het EURO-INDEX kalibratielaboratorium)
- Geen arbeidsloon bij de KWS® behandeling
- Kalibratie voor justage (voorkalibratie) indien mogelijk
- Indien nodig justage en (na)kalibratie
- Reparatie en preventief onderhoud
- Gratis oproep met het advies voor herkalibratie
- Controle op functionaliteit van het instrument
- Vijf jaar historie voor alle gegevens
- 10% korting op onderdelen
- Serienummerregistratie
- Franco retourlevering

RvA accreditatie

Het kalibratielaboratorium van EURO-INDEX beschikt sinds 21 augustus 1997 over een RvA accreditatie naar NEN-EN-ISO/IEC 17025. Deze accreditatie geldt voor verschillende grootheden, zoals gespecificeerd in de scope bij accreditatienummer K105 op www.rva.nl. Test- en meetinstrumenten voor grootheden die deel uitmaken van de gespecificeerde scope, kunnen worden voorzien van een RvA kalibratiecertificaat. De metingen worden uitgevoerd met standaarden waarvan de herleidbaarheid naar (inter)nationale standaarden, ten overstaan van de Raad voor Accreditatie, is aangetoond.

In het Multilateral Agreement zijn de meeste Europese landen overeengekomen elkaars accreditaties te accepteren. Hierdoor is een RvA kalibratiecertificaat internationaal geaccepteerd. Bovendien wordt op een RvA kalibratiecertificaat de meetonzekerheid van de gerapporteerde meetresultaten vermeld.

Verhuur van meetinstrumenten

EURO-INDEX biedt een assortiment meetinstrumenten te huur aan. Na deskundig advies van onze productspecialisten, wordt bepaald welk instrument u nodig heeft voor uw specifieke werkzaamheden. De instrumenten worden compleet met accessoires geleverd, inclusief herleidbaar kalibratiecertificaat.

Wijzigingen voorbehouden EURO-INDEX® VL 13001

EURO INDEX
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